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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,198	10/30/2003	Tim K. Trudeau	ITDE-PNV113	2213

23122 7590 11/14/2006

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EXAMINER	
KRASNIC, BERNARD	

ART UNIT	PAPER NUMBER
2621	

DATE MAILED: 11/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/697,198	TRUDEAU, TIM K.	
	Examiner	Art Unit	
	Bernard Krasnic	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10-30-2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. The abstract of the disclosure is objected to because it is not narrative. It consists and has been drafted as one long run-on sentence, much like claim 1, which is improper. The intent of the abstract is to give a concise but brief statement of the disclosure or the invention as a whole consisting of a series of complete sentences forming a single paragraph.

Correction is required. See MPEP § 608.01(b).

3. The disclosure is objected to because of the following informalities:

Page 4, line 3: "BRIEF DESCRIPTION OF THE DRAWING" should be -- BRIEF DESCRIPTION OF THE DRAWINGS --.

Page 4, line 5: "accompanying drawing" should be -- accompanying drawings --.

Appropriate correction is required.

Claim Objections

4. Claims 2-10, 13, and 17-18 are objected to because of the following informalities:

Claim 2, line 1: "claim 1 including receiving" should be -- claim 1 further including the step of receiving --.

Claim 2, line 3: "step (c) includes storing" should be -- step (c) further includes storing --.

Claim 2, line 5: "pixels in a presently received" should be -- pixels in the presently received --.

Claim 2, line 6: "pixels by using a previously filtered" should be -- pixels by using the previously filtered --.

Claim 3, line 2: "frame of pixels includes" should be -- frame of pixels further includes the step of --.

Claim 4, line 1: "wherein substituting" should be -- wherein the substituting --.

Claim 4, line 2: "frame includes" should be -- frame further includes the step of --.

Claim 5, line 1: "wherein substituting" should be -- wherein the substituting --.

Claim 5, line 2-3: "frame further includes" should be -- frame further includes the step of --.

Claim 6 and claim 7, line 1: "claim 5 including" should be -- claim 5 further including --.

Claim 10, line 1: "claim 8 including" should be -- claim 8 further including the step of --.

Claim 10, line 4: "pixels of a previously received" should be -- pixels of the previously received --.

Claim 13, line 6: "values of a presently" should be -- values of the presently --.

Claims 8-10, 17-18: The limitation "suspension threshold" is insufficient antecedent basis. It is suggested to change "suspension threshold" to -- suspend threshold -- as mentioned in page 12, line 19-20 of the specification.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 10-11, and 18-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re Claim 10, lines 2-3, and Claim 18, line 2: "plus approximately 10%" renders this claim indefinite because it is unclear what is actually being added, plus

approximately 10% of what. It is suggested that "plus approximately 10%" should be -- plus approximately 10% of the number of pixels substituted --.

Claim 11 is dependent upon claim 10.

Re Claim 19, lines 8-9: The limitation "the processor is configured to store the filtered frame of pixels in the first buffer" is not a further limitation of claim 13 such as the ability of having the processor for storing a filtered frame of pixels on a first buffer. Therefore the claim does not set forth the metes and bounds of the claim scope.

Re Claim 20, lines 2-3: The limitation "the display is configured to display the filtered frame of pixels stored in the first buffer" is not a further limitation of claims 12 and 13, such as the ability of having the processor for storing a filtered frame of pixels on a first buffer and displaying this processed filter frame. Therefore the claim does not set forth the metes and bounds of the claim scope.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-4, 8-15, and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Judice (IEEE Transactions on Communications, vol. COM-25, no. 11, pages 1433-1440, November 1977, "Digital Video: A Buffer-Controlled Dither Processor for Animated Images").

Re Claim 1: Judice discloses a method for scintillation suppression of video images comprising the steps of (a) receiving a frame of pixels having intensity values / $\phi_{ij}(k)$ and Pij(k) (see Fig. 1, 3, page 1435, col. 1, Selective Updating, lines 4-9); (b) identifying pixels in the received frame having scintillation noise (see page 1437, col. 1, "background scintillation"); (c) modifying intensity values of pixels in the received frame / $\phi_{ij}(k)$ or Pij(k) (see Fig. 3, page 1435, Selective Updating), identified as having scintillation noise (using threshold D_{ij} , see Fig. 3), to form a filtered frame of pixels / Bi-level display cell $P_{ij}(k)$ after the second compare block (see Fig. 3, Selective Updating, $P_{ij}(k)$ after the second compare block [right compare block on Fig. 3] and during store update information block); (d) counting the number of pixels modified in step (c) (see Fig. 6, page 1437, col. 1, "cumulative number of updates"); and (e) displaying the filtered frame of pixels (see page 1435, col. 2, "transmitted immediately to the display processor"), if the amount of pixels counted is less than a threshold value.

Although Judice fails to specifically disclose the limitation of displaying if the amount of pixels counted is less than a threshold, it would have been obvious to one of

ordinary skill in the art at the time the invention was made to have such a feature because of the fact that if the noise is too large (the counter is large), then nothing should be displayed since it will not be pleasant and recognizable to the human eye.

Re Claim 2: Judice further discloses receiving previous and present frames of pixels, wherein step (c) further includes storing a previously filtered frame of pixels in a buffer (see the "store update information" block in Fig. 3), and modifying intensity values of pixels in the presently received frame of pixels by using the previously filtered frame of pixels stored in the buffer (see the two inputs for the "read next picture element" block in Fig. 3, page 1435, col. 2, second compare block [right compare block on Fig. 3]).

Re Claim 3: Judice further discloses substituting a pixel at a two-dimensional location of the presently received frame of pixels with another pixel at the same two-dimensional location of the previously filtered frame of pixels (see page 1435, col. 2, Fig. 3, Pij(k) and Pij(k-1), second compare block [right compare block on Fig. 3]).

Re Claim 4: Judice further discloses only substituting the pixel of the presently received frame, if the intensity value of the pixel is greater than a first predetermined threshold value (see Fig. 3, page 1434, col. 1, Simulating a Gray Scale with Dither, paragraph 2, "By comparing the intensity with a predetermined threshold" update is possible).

Re Claim 8: Although Judice fails to specifically disclose the steps of (f) setting a number of a suspension threshold; (g) comparing the number of the suspension threshold to the number of pixels counted in step (d); and (h) suspending step (c), if the number of pixels counted in step (d) is larger than the number of the suspension threshold, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the aforementioned steps because of the fact that if the noise is too large (the counter is large), and larger than a specific threshold, then nothing should be modified and displayed since it will not be pleasant and recognizable to the human eye and also since it will create a large discrepancy error for further iterations.

Re Claim 9: Although Judice fails to specifically disclose the number of the suspension threshold is based on an amount of scene dynamics in the received frame of pixels, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the aforementioned steps because just as Judice teaches a dynamically adjusting first threshold as seen in claim 6 above, the reasoning for the setting based on scene dynamics would be similarly applied.

Re Claim 10: Although Judice fails to specifically disclose receiving previous and present frames of pixels, wherein setting the number of the suspension threshold is based on an amount of pixels of a previously received frame, modified in step (c), plus approximately 10%, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to have the aforementioned steps because this extra addition to the total amount of pixels is a typical safety means to increase the threshold and make sure that the scintillation noise will be suppressed.

Re Claim 11: Judice further discloses storing a previously filtered frame of pixels in a buffer (see the "store update information" block in Fig. 3), and step (e) includes displaying the previously filtered frame of pixels (see page 1435, col. 2, "transmitted immediately to the display processor") stored in the buffer, if step (h) suspends step (c).

Although Judice fails to specifically disclose displaying if the amount of pixels counted is less than a threshold, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the aforementioned steps because of the fact that if the noise is too large (the counter is large), and larger than a specific threshold, then nothing should be modified and displayed since it will not be pleasant and recognizable to the human eye and also since it will create a large discrepancy error for further iterations.

Re Claim 12: Judice discloses a system for scintillation suppression comprising a receiver (see Fig. 1, 3, "read next picture element" block, page 1435, col. 1, Selective Updating, lines 4-9) for receiving a frame of pixels / $\phi_{ij}(k)$ and Pij(k) having intensity values, a processor (see Fig. 3, the compare blocks, Title "Dither Processor"), coupled to the receiver, for (a) identifying pixels in the received frame having scintillation noise (see page 1437, col. 1, "background scintillation"), and (b) modifying intensity values of

pixels in the received frame / $\phi_{ij}(k)$ and Pij(k) (see Fig. 3, page 1435, Selective Updating), identified as having scintillation noise (using threshold D_{ij} , see Fig. 3), to form a filtered frame of pixels / Bi-level display cell $P_{ij}(k)$ after the second compare block (see Fig. 3, Selective Updating, Pij(k) after the second compare block [right compare block on Fig. 3] and during store update information block), a counter, included in the processor, for counting the number of pixels modified by the processor (see Fig. 6, page 1437, col. 1, "cumulative number of updates"), and a display for displaying the filtered frame of pixels formed by the processor (see page 1435, col. 2, "transmitted immediately to the display processor", page 1433, col. 1, Introduction, "plasma panel"), wherein the display displays the filtered frame of pixels, if the amount of pixels counted by the counter is less than a threshold value.

Although Judice fails to specifically disclose displaying if the amount of pixels counted is less than a threshold, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the aforementioned steps because of the fact that if the noise is too large (the counter is large), then nothing should be displayed since it will not be pleasant and recognizable to the human eye.

Re Claim 13: Judice further discloses the receiver is configured to receive previous and present frames of pixels (see the two inputs for the "read next picture element" block in Fig. 3, page 1435, col. 2, second compare block [right compare block on Fig. 3]), a first buffer is coupled to the processor for storing a previously filtered frame of pixels (see the "store update information" block in Fig. 3), and the processor is configured to modify

intensity values of a presently received frame of pixels based on the previously filtered frame of pixels stored in the first buffer (see the two inputs for the "read next picture element" block in Fig. 3, page 1435, col. 2, second compare block [right compare block on Fig. 3]).

Re Claim 14: Judice further discloses to substitute a pixel at a two-dimensional location of the presently received frame of pixels with another pixel at the same two-dimensional location of the previously filtered frame of pixels (see page 1435, col. 2, Fig. 3, Pij(k) and Pij(k-1), second compare block [right compare block on Fig. 3]).

Re Claim 15: Judice further discloses to only substitute the pixel of the presently received frame, if the intensity value of the pixel is greater than a first predetermined threshold value (see Fig. 3, page 1434, col. 1, Simulating a Gray Scale with Dither, paragraph 2, "By comparing the intensity with a predetermined threshold" update is possible).

Re Claim 17: Although Judice fails to specifically disclose the system wherein the processor includes a suspension threshold number, and a comparator for comparing the number of pixels substituted by the processor in the presently filtered frame of pixels with the suspension threshold number, and the processor suspending the modification of intensity values of pixels in the presently received frame, if the comparator determines that the number of pixels substituted by the processor in the presently

filtered frame of pixels is larger than the suspension threshold number, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the aforementioned steps because of the fact that if the noise is too large (the counter is large), and larger than a specific threshold, then nothing should be modified and displayed since it will not be pleasant and recognizable to the human eye and also since it will create a large discrepancy error for further iterations.

Re Claim 18: Although Judice fails to specifically disclose the suspension threshold number is based on the number of pixels substituted in a previously filtered frame plus approximately 10%, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the aforementioned steps because this extra addition to the total amount of pixels is a typical safety means to increase the threshold and make sure that the scintillation noise will be suppressed.

Re Claim 19: Judice further discloses a second buffer (see Fig. 3, "1 Bit/PEL Frame Memory" block) is coupled to the processor for storing a previously received frame of pixels / $\phi_{ij}(k)$ and Pij(k), in which the pixels are free-of any modification by the processor (if the second compare block [right compare block on Fig. 3] produces "SAME" then it will be free-of any modification), and the processor is configured to modify the presently received frame of pixels based on the previously received frame of pixels stored in the second buffer (second compare block [right compare block on Fig.

3]), and the processor is configured to store the filtered frame of pixels in the first buffer (see the "store update information" block on Fig. 3).

Re Claim 20: Judice further discloses to display the filtered frame of pixels stored in the first buffer (see page 1435, col. 2, "transmitted immediately to the display processor", page 1433, col. 1, Introduction, "plasma panel").

9. Claims 5-7, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Judice in view of Lee et al (US 6,707,493 B1). The teachings of Judice have been discussed above.

Re Claims 5 and 16: However, Judice fails to disclose or fairly suggest how to only substituting the pixel, if the difference between the intensity value of the pixel of the presently received frame and the intensity value of the pixel of the previously received frame is greater than a second predetermined threshold value.

Lee discloses how to only substituting the pixel, if the difference between the intensity value of the pixel of the presently received frame and the intensity value of the pixel of the previously received frame is greater than a second predetermined threshold value (see Abstract, "comparing difference between a current and previous value with a predetermined value ...", col. 1, lines 41-46).

Therefore, in view of Lee, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Judice's method of substitution by

including the ability to substitute by comparing the difference to a second threshold in order to further detect and correct error values of defective pixels.

Re Claim 6: Judice further discloses dynamically adjusting / hysteric dither (see page 1436, col. 2, paragraph 1, equation 3) at least one of the first and second predetermined threshold values on a frame by frame basis.

Re Claim 7: Although Judice fails to specifically disclose setting the first predetermined threshold value greater than the second predetermined threshold value, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the aforementioned steps because when observing the difference as described in claim 5, it is noticed that small values are considered since the difference operator is used and therefore a small threshold value for the second predetermined threshold will be used. Therefore the second predetermined threshold will be smaller then the first predetermined threshold.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tiana discloses an image fusion system and method; Lee et al discloses a method and apparatus for error detection and correction in image sensor; Kruppa discloses integrated magnetic ink character recognition system and method; Lin

et al discloses a method and apparatus for digital image defect correction and noise filtering; Corum et al discloses a dark frame subtraction.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bernard Krasnic whose telephone number is (571) 270-1357. The examiner can normally be reached on Mon-Thur 7:30am-5:00pm and every other Friday 7:30am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jong-Suk (James) Lee can be reached on (571) 272-7044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Bernard Krasnic

JONG SUK LEE
SUPERVISORY PATENT EXAMINER